

CLAIMS

Please amendment the claims as follows:

1. (Currently Amended) An apparatus comprising:
a cooling plate ~~that~~ for attachment to an electronics chip, wherein the cooling plate
encloses an inlet plenum, an outlet plenum, and a plurality of microchannels connecting the inlet
plenum to the outlet plenum, wherein the cooling plate is substantially made of silicon.
2. (Original) The apparatus of claim 1, wherein the cooling plate includes
a cooling base having the inlet plenum, the outlet plenum, and the plurality of
microchannels formed therein, and
a cover.
3. (Original) The apparatus of claim 2, wherein the cooling base is made of polycrystalline
silicon.
4. (Original) The apparatus of claim 3, wherein the cover is made of polycrystalline silicon.
5. (Original) The apparatus of claim 3, wherein the microchannels are formed by etching
into the cooling base.
6. (Original) The apparatus of claim 2, further comprising one or more external fluid
connections made at lateral edges of the cooling base.
7. (Original) The apparatus of claim 2, further comprising one or more external fluid
connections having openings made through the cover.
8. (Original) The apparatus of claim 2, further comprising an electronics chip having a first
face that includes circuitry formed thereon, and a second face that is attached to the cooling base.

9. (Original) The apparatus of claim 1, further comprising an electronics chip having a first face that includes circuitry formed thereon, and a second face that is attached to the cooling plate.

10. (Original) The apparatus of claim 9, wherein the chip includes circuitry for at least a portion of a processor, the apparatus further comprising:

a memory operatively coupled to the processor;

an input/output system, including a display unit, operatively coupled to the processor; and

a power supply operatively coupled to the processor.

11. (Original) The apparatus of claim 9, wherein the chip includes circuitry for at least a portion of a telecommunications circuit, the apparatus further comprising:

an antenna operatively coupled to the telecommunications circuit;

an input/output system, including a display unit, operatively coupled to the telecommunications circuit; and

a power supply operatively coupled to the telecommunications circuit.

12. - 15. (Canceled)

16. (Original) An apparatus for cooling an electronics chip having a substrate with a first face having circuitry thereon, and an opposite second face, the apparatus comprising:

means for containing a cooling fluid moving through microchannels along the second face inside a layer of silicon located adjacent to the second face.

17. (Original) The apparatus of claim 16, wherein the means for moving the cooling fluid include an inlet plenum and an outlet plenum in fluid communication with the microchannels, and wherein the microchannels are formed by grooves in a piece of silicon and made separately from the chip.

18. (Original) The apparatus of claim 16, further comprising:
external fluid-connection means for moving the cooling fluid, located at lateral edges of the means for containing the fluid.
19. (Original) The apparatus of claim 16, wherein the chip includes circuitry for at least a portion of a processor, the apparatus further comprising:
a memory operatively coupled to the processor;
an input/output system, including a display unit, operatively coupled to the processor; and
a power supply operatively coupled to the processor.
20. (Original) The apparatus of claim 16, wherein the chip includes circuitry for at least a portion of a telecommunications circuit, the apparatus further comprising:
an antenna operatively coupled to the telecommunications circuit;
an input/output system, including a display unit, operatively coupled to the telecommunications circuit; and
a power supply operatively coupled to the telecommunications circuit.
21. (Original) The apparatus of claim 16, wherein the microchannels comprise a plurality of parallel high-aspect-ratio grooves etched into a cooling base, wherein the cooling base is covered with a cover.